

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	10/713,240	Confirmation No.	1165
Applicant	:	Khaled El-Maleh, et al.		
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Commissioner for Patents
P.O. Box 1450
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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Sir:

Applicant respectfully requests a Pre-Appeal Brief Review based upon the Examiner's failure to establish the following in the Office Action mailed August 26, 2009: a prima facie case of anticipation of claims 1-3, 6-8, 11-12, 23, 26, 28-29, 31, 46-47, 51, 53-54, 59, and 61 under 35 U.S.C. § 102(b); and a prima facie case of obviousness of claims 4-5, 9-10, 13-12, 24-25, 27, 30, 32-34, 35-41, 42-45, 48, 50, 52, 55, 57-58, 60, 62-65, and 66-68 under 35 U.S.C. § 103(a). As outlined below, the applied references fail to disclose or suggest one or more elements recited in Applicant's independent claims 1, 6, 12, 18, 23-28, 46, 49, 53, 59, and 62. For at least this reason, the rejections under 35 U.S.C. §§ 102(b) and 103(a) were improper.

For the sake of clarity, Applicant only presents arguments below with respect to claim 1. By setting forth the following clear grounds of error with respect to claim 1, Applicant does not assert that they are the only errors in the Office Action, nor does Applicant waive any additional arguments that may be asserted in an Appeal Brief, particularly with respect to the independent claims and any claims dependent from such independent claims.

Independent Claim 1

Claim 1 recites a method for categorizing in a video encoder a portion of a video frame, the method comprising using texture information in the portion to determine whether the portion comprises at most a predetermined amount of spatial information. If the texture information indicates that the portion comprises at most the predetermined amount of spatial information, then the portion is categorized as nonpredictive.¹ If the texture information indicates that the portion does not comprise at most a predetermined amount of spatial information, then motion information is used to determine whether the portion comprises at least a predetermined amount of predictive information.²

In support of the rejection under 35 U.S.C. § 102(b) of independent claim 1 in the final Office Action, the Examiner indicated that U.S. Patent No. 5,731,835 to Kuchibholta et al. (“Kuchibholta”) discloses each and every element of claim 1. Applicant respectfully disagrees.

As discussed above, claim 1 requires the use of *motion information* to determine whether a portion of a video frame comprises at least a predetermined amount of predictive information *if it is first determined* that *texture information* indicates that the portion does not comprise at most a predetermined amount of spatial information. As such, per the method of claim 1, *use of motion information* to determine whether the portion comprises at least a predetermined amount of predictive information *is conditioned on the prior determination that the texture information* indicates that the portion does not comprise at least a predetermined amount of spatial information. Thus, the method of claim 1 is a multi-step, conditional process that may allow selective bypassing of motion estimation and compensation calculations,³ thus reducing the amount of processing resources consumed.⁴

Motion estimation is a computationally intensive process typically used to make an encoding mode decision, i.e., between inter-coding and intra-coding. The ability to make an initial mode decision to use intra-coding without actually performing motion estimation can result in substantial computational savings. As seen in claim 1, texture is used to determine whether a portion of a video frame comprises at most a predetermined amount of spatial information. If the texture information does so indicate, then the portion is categorized as nonpredictive, and thus designated for intra-coding without performing any motion estimation.

¹ Applicant's specification, paragraph [0040], FIG. 3 at 310 (“YES” branch).

² *Id.* at paragraph [0042], FIG. 3 at 320 (“NO” branch) and 320.

³ *Id.* at paragraph [0039].

⁴ *Id.* at paragraph [0033].

If the texture information indicates that the portion does not comprise at most a predetermined amount of spatial information, then motion information is used to determine whether the portion comprises at least a predetermined amount of predictive information.

The Examiner indicated that FIG. 1 of Kuchibholta discloses all the elements of claim 1. However, as seen in FIG. 1 of Kuchibholta, Intra-Inter Decision (IID) block 110 selects between intra-coding and inter-coding based on the INTRA and INTER information received by IID 110. In contrast to claim 1, however, FIG. 1 of Kuchibholta shows that in order for IID block 110 to select between intra-coding and inter-coding, motion estimation is *always* performed, i.e., there is no condition that is applied to determine whether to use motion information. In order to generate the INTER information at 107 that is input to IID block 110, the coding system 100 of Kuchibholta generates motion vectors via motion vector predictor 126. Then, subtractor 106 subtracts the predicted macroblock (that was predicted using the generated motion vectors) from the input macroblock, thereby producing a residual macroblock.⁵ IID 110 calculates the variance of the residual macroblock and the variance of the input macroblock in order to determine whether to code the macroblock using intra-coding or inter-coding.⁶ FIG. 1 thus shows that, in order for IID 110 to make a coding decision, motion estimation *must* be performed.

The fact that Kuchibholta *requires* motion estimation to be performed in every coding mode decision is further expressed in Kuchibholta's specification. Kuchibholta states that the "MPEG encoder system discussed above is a *conventional* system that is available as a set of integrated circuits as model L64120 from LSI Logic, Inc. of Milpitas, Calif.,"⁷ (emphasis added). Further, Kuchibholta states that "in a *typical* MPEG encoder, the *actual IID decision is made after* the half-pel *motion vectors are generated* and best motion vector is chosen,"⁸ (emphasis added). Thus, the coding system in Kuchibholta is a *typical* coding system that *always* uses motion estimation in order to make a coding mode decision, i.e., a decision whether to inter-code or intra-code a block.

The manner in which residual macroblocks are produced may be unclear to the Examiner. During the Examiner Interview of November 3, 2009, the Examiner indicated that a residual macroblock may be produced without use of motion information. Applicant strongly disagrees. It is well known in the art that, in order to produce a predictive macroblock, motion

⁵ Kuchibholta, col. 3, lines 10-14.

⁶ *Id.* at col. 3, lines 29-37.

⁷ *Id.* at col. 4, lines 27-30.

⁸ *Id.* at col. 4, lines 57-59.

estimation must be performed and motion information must be used, for example, to generate motion vectors that point to a predictive macroblock in a different, reference frame than the frame containing the macroblock currently being coded. A residual macroblock is produced by subtracting the predictive macroblock from the macroblock being coded. Hence, motion estimation must be performed, and motion information therefore *must* be used, in order to generate a residual macroblock, like in Kuchibholta.

The Kuchibholta disclosure is contrasted against claim 1, where the *use of motion information* to determine whether the portion comprises at least a predetermined amount of predictive information *is conditioned on the prior determination that the texture information* indicates that the portion does not comprise at least a predetermined amount of spatial information. The features of claim 1 may allow the present invention to selectively bypass motion estimation and compensation calculations, unlike the device in Kuchibholta, which performs motion estimation to render an intra-inter mode decision for every block to be coded. Thus, Kuchibholta fails to teach or suggest all the elements of claim 1.

In the Response to Arguments section set forth in the final Office Action dated August 26, 2009, the Examiner stated, "The features 'at least a predetermined amount of predictive information is conditioned on the prior determination that...' is not claimed in claim 1. Therefore, the arguments are not persuasive." Applicant submits that, while the *exact* phrase "use of motion information to determine whether the portion comprises at least a predetermined amount of predictive information is conditioned on the prior determination that the texture indicates that the portion does not comprise at least a predetermined amount of spatial information" does not appear in claim 1, the "if...then" structure of claim 1 clearly conveys that exact meaning.

Specifically, claim 1 recites "if the texture information indicates that the portion does not comprise at most a predetermined amount of spatial information, then: using motion information to determine whether the portion comprises at least a predetermined amount of predictive information" (emphasis added). This particular "if...then" statement of claim 1 makes clear that motion information is used to determine whether the portion comprises at least a predetermined amount of predictive information *after* the texture information indicates that the portion does not comprise at most a predetermined amount of spatial information. In this sense, the use of motion information in claim 1 is conditioned on the prior determination that the texture indicates that the portion does not comprise at least a predetermined amount of spatial information.

For at least these reasons, the Examiner failed to show that Kuchibholta discloses or suggests all the elements of claim 1. Accordingly, the Examiner's rejection of independent claim 1 as being anticipated by Kuchibholta was improper.

CONCLUSION

For at least the reasons stated above, the rejection of at least independent claim was improper and must be reversed. Applicant requests a review and a panel decision that promptly resolves the issues in Applicant's favor and eliminates the need for an Appeal Brief. The Examiner is invited to telephone the below-signed attorney to discuss this application.

Please charge any fees or overpayments that may be due with this response to Deposit Account No. 17-0026.

Respectfully submitted,

Date: November 23, 2009

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